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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,391	07/24/2003	Kenneth G. Powell	P-4279D1D1	9812
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DAVID W. HIGHET, VP AND CHIEF IP COUNSEL BECTON, DICKINSON AND COMPANY 1 BECTON DRIVE, MC 110 FRANKLIN LAKES, NJ 07417-1880				
			EXAMINER HECKENBERG JR, DONALD H	
			ART UNIT 1722	PAPER NUMBER

DATE MAILED: 12/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/626,391

Applicant(s)

POWELL ET AL.

Examiner

Donald Heckenberg

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

1. The first line of the specification needs to be updated to reflect that U.S. Pat. App. No. 09/794,829 (to which the instant application claims priority) has been abandon.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

Claim 1 recites that "a silicon mold member is disposed in said mold cavity, said silicon mold member with a mold surface facing said mold cavity" in lines 4 and 5. Claim 7 uses similar language at lines 4-7. Since the mold member is "in" the mold cavity, it is not clear how a mold surface may "face" the mold cavity - which implies that the mold member is adjacent to a mold cavity. In other words, it is unclear how an object can be within an opening, and yet at the same time face the opening. What would make more sense in this case (and which coincides with the disclosure as well as the rest of the claim language),

is to say that the silicon mold member is within the recess which defines the mold cavity. It then would make sense to say that the silicon mold member has a surface facing the mold cavity. Therefore, the claim will be interpreted as such in the rest of this Office Action. However, appropriate clarification and/or correction is required.

Claim 3 also recites features directed at the relationship of the mold member and the mold cavity. For the reasons discussed above in relation to claim 1, in this claim, the reference to the "mold cavity" in line 1, will be taken to mean the recess defined in claim 1.

Claim 6 recites "said recesses" in line 1. There is no antecedent basis for this limitation as this is clearly not referring to the recess defined in claim 1. Based on the disclosure of the instant application it appears as though this limitation is referring to the "structural features" defined in claim 1. The recess limitation will therefore be interpreted as such in the rest of this Office Action. However, appropriate clarification and/or correction is required.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicants are advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35

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U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pleasant (U.S. Pat. No. 4,959,002) in view of The IBM Technical Disclosure Bulletin entitled "Use of High Precision Silicon Molds for Replicating Microelectronic Packaging Structures" (hereinafter "The Technical Disclosure").

Pleasant discloses an apparatus for injection molding. The apparatus comprises a mold section (14) with a recess (155) defining a mold cavity for receiving a plastic molding material. Pleasant further discloses an insert mold member (154) disposed in the recess covering the bottom surface of the recess, with the insert mold member having a mold surface facing the mold cavity (186). Pleasant further discloses means for introducing molding material into the mold cavity (see for example cl. 3, ll. 27-35), as well as a means for releasing the molded product (see for example cl. 6, l. 46 - cl. 7, l. 6).

Pleasant does not disclose the insert mold member to be made of silicon, or the mold member's mold surface to comprise a plurality of micron or submicron size structural features defining an impression for molding.

The Technical Disclosure discloses that it is advantageous to make molds for replicating microstructures, including 3-D geometries down to micrometer dimensions, out of silicon. The Technical Disclosure notes that silicon is an advantageous molding material for molding microstructures because it can be fabricated with a high degree of precision at a low cost.

It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to have modified the apparatus disclosed by Pleasant as such to have made the mold member insert from silicon and comprise a mold surface with a plurality of micron sized structural features because this would allow for micron sized features to be molded, and because silicon is a material that can be fabricated with a high degree of precision at a low cost as suggested by The Technical Disclosure.

Claims 2 and 6 recite specific shapes and dimensions for structural features of the mold member. The particular shape and dimension of the structural features are effective to impart the shape to the molded product, and as such, cause effective variables. The determination of a cause effective variable is usually seen as obvious absent a new or unexpected result. In re Boesch, 617 F.2d 272, 203 USPQ 215 (CCPA 1980); In re Aller, 220 F.2d 454, 105 USPQ 233 (CCPA 1955). In the instant case, it

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would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to have modified the shapes and dimensions, such as having recesses 5 to 250 microns deep in row and columns, of the structural features of the mold member in the apparatus suggested by Pleasant and The Technical Disclosure because this would all for corresponding features to be imparted to the molded product.

8. The following references cited but not relied upon are deemed pertinent to the instant application:

Noeker (U.S. Pat. No. 5,234,571) discloses stepped mold inserts for making microstructural bodies.


Lessmöllmann et al. (U.S. Pat. No. 5,501,784) discloses a process for producing microstructures.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald Heckenberg whose telephone number is (571) 272-1131. The examiner can normally be reached on Monday through Friday from 9:30 A.M. to 6:00 P.M.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech, can be reached at (571) 272-1137. The official fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<<http://pair-direct.uspto.gov>>>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

  
12-13-04  
Donald Heckenberg  
A.U. 1722